

## PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT  
(PCT Article 36 and Rule 70)

REC'D 23 FEB 2004



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Applicant's or agent's file reference 3074PTWO/AG/1a	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 02/00319	International filing date (day/month/year) 15.01.2002	Priority date (day/month/year) 15.01.2002
International Patent Classification (IPC) or both national classification and IPC D21H25/18		
Applicant CONSORZIO INTERUNIVERSITARIO PER LO SVILUPPO ...		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.  
  
☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).  
  
 These annexes consist of a total of 2 sheets.

## 3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand  12.08.2003	Date of completion of this report  20.02.2004
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Karlsson, L  Telephone No. +49 89 2399-8424  

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/EP 02/00319**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17):*

**Description, Pages**

1-10 as originally filed

**Claims, Numbers**

1-11 received on 27.01.2004 with letter of 23.01.2004

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/EP 02/00319

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims	3,4,6-8,11
	No: Claims	1,2,5,9,10
Inventive step (IS)	Yes: Claims	
	No: Claims	1-11
Industrial applicability (IA)	Yes: Claims	1-11
	No: Claims	

**2. Citations and explanations**

**see separate sheet**

**Re Item V**

**Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. The present invention pertains to a method for paper deacidification wherein, e.g. old books are treated with an alkaline suspension comprising suspended particles as defined in the present claim 1 having a dimension between 10 nm up to 2  $\mu$ m. The solvent for the suspension may be water, ethyl ether, acetone or alcohols and their mixtures.

2. The present set of claims do not meet the requirements of Articles 6 PCT for the following reasons:

2.1 The following wordings have not been clearly defined due to the usage of the underlined relative features:

"high temperature homogeneous phase reaction" (cf claim 6).

"giving a low solubility in a nanosized aqueous core" (cf claim 8).

2.2 The meaning of the wording "Use of the suspension as...alkaline reservoir" is not understood. Needless to say, but the claims should contain technical features which shall define the invention in a clear and concises manner. If some features of the claims does not have a clear technical meaning it seems as they should be omitted from the claims.

2.3 The exact technical meaning of the wording "consolidation of porous material" of claim 16 is not understood.

3.1 To use a alkaline suspension having particle of metal oxides, hydroxides or carbonates within the size range of 10 nm to 2  $\mu$ m in a solvent as defined in the present claim 1 for deacidification purposes is commonly used and thus well-known. E.g. the documents D1:EP-A-1 001 084 and D5:US-A-6 235 150 disclose all an alkaline suspension as defined in the present claim 1 (see D1, col.6, line 55 to col.8, line 22, claims 1-6,col.4, lines 14-25; see D5, claims 1, example 1).  
The present claim 1, as well as claims 2,5,9 and 10 hence lacks novelty with regard to the disclosures of D1 or D5 (Art.33.2 PCT).

3.2 To use suspended particles of basic oxides, hydroxides or carbonates having the size range as defined in claim 1 are known from D2:US-A-4 522843, D3:US-A-6 080 448 and D4:WO-A-99 01377. Although D2 to D4 all use a different solvent, e.g. a halogenated hydrocarbon, the skilled person would still get an indication that the defined basic compounds are frequently used for de-acidification purposes (see D2, claims 1-24, examples 6,7; see D3, claims 1-17, col.3, line 16 to col.4, line 48; see D4, claims 1-16).

3.3 The rest of the dependent claims do presently not seem to add any novel and inventive matter with regard to the disclosures of the above mentioned documents and the documents D6:EP-A-0 543 372 and D7:EP-A-1 134 302 (Art.33.2 and 33.3 PCT). However, a combination of these features may nevertheless meet the requirements of Article 33.3 PCT.

**New Set of Claims**

- 1) Basic suspension of basic oxides or hydroxides or carbonates chosen in the group consisting of:  $\text{Li}_2\text{O}$ ,  $\text{Na}_2\text{O}$ ,  $\text{K}_2\text{O}$ ,  $\text{MgO}$ ,  $\text{CaO}$ ,  $\text{SnO}$ ,  $\text{SnO}_2$ ,  $\text{PbO}$ ,  $\text{Pb}_2\text{O}$ ,  $\text{Pb}_2\text{O}_3$ ,  $\text{BiO}$ ,  $\text{Bi}_2\text{O}_3$ ,  $\text{Sb}_2\text{O}_3$ ;  $\text{LiOH}$ ,  $\text{NaOH}$ ,  $\text{KOH}$ ,  $\text{Mg}(\text{OH})_2$ ,  $\text{Ca}(\text{OH})_2$ ,  $\text{Al}(\text{OH})_3$ ,  $\text{Sn}(\text{OH})_2$ ,  $\text{Sn}(\text{OH})_4$ ,  $\text{Pb}(\text{OH})_2$ ,  $\text{Bi}(\text{OH})_3$ ,  $\text{Sb}(\text{OH})_3$ ,  $\text{Li}_2\text{CO}_3$ ,  $\text{Na}_2\text{CO}_3$  deca-hydro,  $\text{Na}_2\text{CO}_3$ ,  $\text{K}_2\text{CO}_3$ ,  $\text{MgCO}_3$ ,  $\text{CaCO}_3$ ,  $\text{PbCO}_3$ , anhydro and basic,  $\text{Bi}_2\text{O}_2\text{CO}_3$  or their mixtures, wherein the suspended particles have dimensions comprised between 10nm up to  $2\mu\text{m}$  and the solvent are chosen in the group of polar solvents consisting of: water, ethyl ether, acetone and alcohols and their mixtures, wherein the suspended particles have dimensions comprised between 10nm up to  $2\mu\text{m}$ .
- 2) Basic suspensions according to claim 1 wherein the suspended particles have dimensions comprised between 50nm up to 500nm.
- 3) Basic suspension according to claims 1. and 2 wherein the alcohols are chosen in the group consisting of: methanol, ethanol, 1-propanol, 2-propanol, butanol, pentanol, and their mixtures.
- 4) Basic suspension according to Claims 1 – 3 consisting of:  $\text{Ca}(\text{OH})_2$  hydroxide particles suspended in 1% water and 99% 1-propanol or 2-propanol (w/w).
- 5) Process for the preparation of the suspensions according to Claims 1 – 4 by vigorous stirring of the particles to be suspended in the appropriate solvent (or solvents mixture), if necessary with the aid of a sonicator or ultra-sonicator or with the aid of a homogeniser

- 6) Process according to Claim 5 wherein the particles to be suspended are obtained by homogeneous phase reaction at high temperature.
- 7) Process according to Claim 10 wherein the particles to be suspended are obtained by slaking of the oxides.
- 5 8) Process according to Claim 10 wherein the particles to be suspended are obtained by mixing two water in oil microemulsions, giving a low solubility salt in nanosized aqueous core.
- 9) Use of the suspension according to claims 1 - 4 in paper deacidification processes, as neutralising agent and also as alkaline reservoir.
- 10 10) Process for paper deacidification wherein suspensions according to claims 1 - 4 are applied to the papers to be deacidified by: spraying, immersing, brushing, or by mass-deacidification process.
- 11) Use of the suspensions according to Claims 1 - 4 in processes for the consolidation of porous materials.

**Box No. VIII (iv) DECLARATION: INVENTORSHIP (only for the purposes of the designation of the United States of America)**

*The declaration must conform to the following standardized wording provided for in Section 214: see Notes to Boxes Nos. VIII, VIII (i) to (v) (in general) and the specific Notes to Box No. VIII (iv). If this Box is not used, this sheet should not be included in the request.*

**Declaration of inventorship (Rules 4.17(iv) and 51bis.1(a)(iv))  
for the purposes of the designation of the United States of America:**

I hereby declare that I believe I am the original, first and sole (if only one inventor is listed below) or joint (if more than one inventor is listed below) inventor of the subject matter which is claimed and for which a patent is sought.

This declaration is directed to the international application of which it forms a part (if filing declaration with application).

This declaration is directed to international application No. PCT/..... (if furnishing declaration pursuant to Rule 26ter).

I hereby declare that my residence, mailing address, and citizenship are as stated next to my name.

I hereby state that I have reviewed and understand the contents of the above-identified international application, including the claims of said application. I have identified in the request of said application, in compliance with PCT Rule 4.10, any claim to foreign priority, and I have identified below, under the heading "Prior Applications," by application number, country or Member of the World Trade Organization, day, month and year of filing, any application for a patent or inventor's certificate filed in a country other than the United States of America, including any PCT international application designating at least one country other than the United States of America, having a filing date before that of the application on which foreign priority is claimed.

Prior Applications: .....

I hereby acknowledge the duty to disclose information that is known by me to be material to patentability as defined by 37 C.F.R. § 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the PCT international filing date of the continuation-in-part application.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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(if not contained in the request, or if declaration is corrected or added under Rule 26ter after the filing of the international application. The signature must be that of the inventor, not that of the agent)

Date: 10.12.2001  
(of signature which is not contained in the request, or of the declaration that is corrected or added under Rule 26ter after the filing of the international application)

Name: Luigi DEI

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Date: NOV. 29, 2001  
(of signature which is not contained in the request, or of the declaration that is corrected or added under Rule 26ter after the filing of the international application)

☒ This declaration is continued on the following sheet, "Continuation of Box No. VIII (iv)".



Continuation of Box No. VIII (i) to (v) **DECLARATION**

If the space is insufficient in any of Boxes Nos. VIII (i) to (v) to furnish all the information, including in the case where more than two inventors are to be named in Box No. VIII (iv), in such case, write "Continuation of Box No. VIII ..." (indicate the item number of the Box) and furnish the information in the same manner as required for the purposes of the Box in which the space was insufficient. If additional space is needed in respect of two or more declarations, a separate continuation box must be used for each such declaration. If this Box is not used, this sheet should not be included in the request.

## CONTINUATION OF BOX NO. VIII (iv)

Name: Rodorico GIORGI

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Date: 10.12.2001

(of signature which is not contained in the request, or of the declaration that is corrected or added under Rule 26ter after the filing of the international application)

Name: CLAUDIUS VINICIUS SCETTINO

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Date: 10.12.2001

(of signature which is not contained in the request, or of the declaration that is corrected or added under Rule 26ter after the filing of the international application)